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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,137	11/02/2005	Thomas Mueller	14603-011US1 P2002,0723 U	6663
26161	7590	05/18/2007	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			WHITE, JUAN C	
			ART UNIT	PAPER NUMBER
			2822	
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			05/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/526,137	Applicant(s) MUELLER, THOMAS	
	Examiner Juan White	Art Unit 2822	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>January 12 2006</u> . | 6) <input type="checkbox"/> Other: _____  |

***Detailed Action***

This Office Action is in response to the application filed February 28, 2005.

***Claim Rejections - 35 USC § 112***

Claim 4 is rejected under 35 U.S.C. 112, second paragraph. The MPEP states "A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. \* > IPXL Holdings v. Amazon.com, Inc., 430 F.2d 1377, 1384, 77 USPQ2d 1140, 1145 (Fed. Cir. 2005); < Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990) \* > (< claim directed to an automatic transmission workstand and the method \* of using it \* held \*\* ambiguous and properly rejected under 35 U.S.C. 112, second paragraph > ) < ." Claim 4 further attempts to limit an apparatus, a Hall plate sensor, with a method of using the apparatus, i.e. "A method for operating a Hall sensor according to any one of claims 1 to 3; wherein a compensation current (IK) flows parallel to the control current (IS) whose magnitude is such that the thickness (D) of the Hall plate (2) is essentially constant."

***Claim Rejections – 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1 & 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schott (US 6,278,271 B1) in view of Popovic (US 4,929,933).

In claim 1, Schott disclose a Hall sensor on a semiconductor substrate 19 in which a Hall plate (area containing the contacts) is formed from a zone 18 of one conduction type (n-type); in which a zone 20 adjoining the Hall plate, which zone 20 is separated from said Hall plate by a space-charge zone (i.e space charge region which is inherent in all materials of dissimilar conduction types), of the other conduction type is provided (p-type); and in which the Hall plate comprises contacts (2-5) for supplying a control current.

In regards to the functional language, “for supplying a control current” and “for supplying a compensation current, claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function, In re Danly, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Apparatus claims cover what a device is, not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

In re claim 3, Schott discloses in which the Hall plate (area containing the contacts) is arranged on the surface of the substrate 19; and in which the zone 20 of the other conduction type (p-type) is embedded in a substrate 19 of the conduction type of the Hall plate. Schott states that Hall plate has an optional layer 21 that is p-type, the same type as substrate 19. (Fig . 1-2, column 3 lines 55-60; column 6 lines 18-24)

However, Schott does not disclose the zone 20 of the other conduction type comprises contacts.

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Popovic disclose the zone 8 of the other conduction type comprises contact R. (Fig. 4, column 5 lines 26-40)

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the Hall sensor structure as taught by Schott with the zone comprising a contact as taught by Popovic to provide a Hall element that is stable for long times. (column 1 lines 45-50)

Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schott (US 6,278,271 B1) and Popovic (US 4,929,933) as applied to claims 1 & 3 above in view of Suzuki (US 4,010,486).

Schott and Popovic teach all the rejections above.

Schott teach that the Hall plate is arranged on the surface of the substrate.

However, Schott and Popovic do not teach in which the zone of the other conduction type is embedded in a substrate of the conduction type of the Hall plate.

In re claim 2, Suzuki discloses between two zones ( $J_H$  and  $J_C$ ), the other conduction type, i.e. n-type. With this combination, the Hall plate disclosed in Schott is arranged between two zones ( $J_H$  and  $J_C$ ) of the other conduction type, i.e n-type. (Fig. 1 column 3 lines 45-56)

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the Hall sensor structure as taught by Schott and the zone comprising a contact as taught by Popovic with the conduction types as taught by Suzuki to have a high current amplification factor and good saturation characteristics. (column 1 lines 61-64)

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Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schott (US 6,278,271 B1) and Popovic (US 4,929,933) as applied to claims 1 & 3 above in view of Popovic et al. (US 4,634,961).

Schott and Popovic teach all the rejections above.

However, Schott and Popovic do not teach wherein a compensation current (IK) flows parallel to the control current (IS) whose magnitude is such that the thickness (D) of the Hall plate (2) is essentially constant.

In re claim 4, Popovic et al. discuss where the thickness is constant based on the channel current. Given that in a product by process claim the patentability is based on the product itself, and since Popovic et al. state that the thickness of the Hall element will remain constant, the structural limitations of the claim is met. (column 2 lines 1-18)

### *Conclusion*

The prior are made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to Hall plates:

Iramanesh (US 5,733,791)

Funaki et al. (US 5,548,151)

Macdougall (US 4,253,107)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan White whose telephone number is 571-270-1232. The examiner can normally be reached on 7:30 - 5:00 M-F.

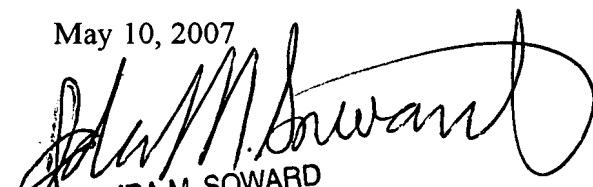
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
JW

May 10, 2007

  
IDA M. SOWARD  
PRIMARY EXAMINER